XXXVI. Answer to geological queries of "A Constant Reader."

Mr. Westgarth Forter

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the gentleman has ascertained by *direct experiment* that such a redundancy of salubrious air exists in the southern regions, I am at a loss to know. I hope he will have the goodness to point out the plan by which he ascertained such an important phenomenon; which will confer a favour on,

Sir, yours, &c.

Dorset Street, Salisbury Square,
Sept. 9. 1817.

J. TATUM.

P. S.—Any hints from your correspondent Mr. J. Acton will confer a favour, as perhaps I shall pursue the subject next spring.

XXXVI. *Answer to Geological Queries of "A Constant Reader."* By Mr. WESTGARTH FORTER,

To Mr. Tilloch.

SIR, — I HAVE observed in your Number for July last, some geological queries, by your correspondent, with the signature of "A Constant Reader," requesting an early answer thereto.

I therefore take the opportunity of informing him, with respect to his 2d question, ("whether or not the *great whin sill*, or stratum of basalt, shown in p. 152 of my Treatise on a Section of the Strata, &c. has not such a *continuous edge* on the surface, as clearly indicates it to form, like each of the other principal strata, a vast *extended plane* having curved parts within the earth, &c.") That wherever I have made observations, or traced the great whin-sill, it is as conformable as any other stratum, although *very variable in thickness*, having its under lying and over lying strata. And it may be traced upwards of fifteen miles, commencing a little below the smelting-house at Tynehead, where it is thrown up to the SW. about sixteen fathoms, by the influence of a great dyke or vein, commonly called the *Back-bone, or Great Sulphur Vein*. As we proceed, a little above the smelting-house, it disappears, about the distance of two miles, having its over lying stratum upon it; viz. *Tyne-bottom limestone, &c.* until we arrive at the river Tees; where it again makes its appearance, the Tees running upon it almost all the way to the high waterfall at Caldron Snout, where it assumes locally, *the appearance of detached and over lying masses of basalt*; which, as Mr. Winch observes, may very probably resemble those of the King's Park Edinburgh. It may be also necessary to state, there is a level drove in the limestone, under the great-whin-sill, not far from Caldron Snout, and near the conflux of the river Tees, and Maize-Beck; and this Beck, or rivulet, which divides the counties of Westmoreland and Yorkshire, near Birdale, runs all the way for the distance of a mile or more,

more, W. of the conflux, upon or even, in the whin, where it again disappears, by the over-lieing of *Tyne-bottom limestone*, which limestone may be traced to the W. up the same Beck, to *High Cup Nick*, where the stratum becomes abrupt, as we descend to Dufton, and the whin, bassetting underneath, and only about eight fathoms thick. It may also be observed at *Great Rundle Beck*, where the principal level commences, and is drove upon it, to the mines at Dufton-fell.

I may further add, that the same great whinstone-bed occurs on the river Wear, near the town of Stanhope, in the county of Durham; but not so thick as at Caldron Snout.

I shall endeavour to answer the other queries in my next communication.

I am, sir,

Your most obedient servant,

Ganigill, August 26, 1817.

WESTGARTH FORSTER.

XXXVII. *Description of an Apparatus for consuming Fire-damp in the Mines without Danger of an Explosion:—Apparatus for re-lighting the Miners' Davy.* By Mr. J. MURRAY,

To Mr. Tilloch.

SIR, — THE sketches which accompany this, represent an apparatus by which the fire-damp may be consumed on the spot, in the mine, without fear of explosion; and an appendage to light the safe-lamp when extinguished. It is presumed that the descriptive account will be found sufficiently explanatory, and intelligible. If it should be objected to (fig. 1), that its size is too great,—it may be observed, that in the Air collieries safe-lamps on the principle of the wire-gauze have been used by Mr. Taylor *three times* the size of those constructed by Sir H. Davy.

I did not find the plan I originally proposed to relight the lamp by any means unequivocal, when tried in the mine. This circumstance led to the present invention.

I am, sir,

Your most humble servant,

Douglas, Isle of Man, Sep. 3, 1817.

J. MURRAY.

P. S.—The great increase of intensity which I discovered by exposing the Galvanic plates for a few minutes to the action of the atmosphere, prior to reimmersion into the cells, I have since repeated very often with the same uniform results. I shall be glad to see these in your next Number.

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